ACCESSION NR: AP5018760 EWP(1) Pf-4 JD UR/0304/64/000/04 /0068/0069

AUTHOR: Litvychenko, N. Y. (Engineer); Dobrovol'skiy, G. G. (Engineer); Uvarov, V.I.

TITLE: Production of magnetically soft materials using powder metallurgy 18

SOURCE: Mashinostroyeniye, no. 4, 1964, 68-69

TOPIC TAGS: powder metallurgy, mechanical engineering

ABSTRACT: At the "Elektroizmeritel'" plant in Zhitomir, which makes electrical measuring instruments of type Ts-57, the magnetic circuits employed are made of Armco steel. In the manufacture of "ring" parts from this steel, 80% of the material is wasted in the form of shavings, and the process is labor consuming.

Experimental investigations were made by the Technical Planning and Design Institute of the Kiev Sovnarkhoz in cooperation with the Brovary Powder Metallurgy Plant with the aim of adopting a powder metallurgy process for the production of "ring" parts.

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L 07128-65

ACCESSION NR: AP5018760

The powder material used, pressing, sintering, and post-pressing operations are described. Dimensions of the parts are given, and their various physical and magnetic properties are listed. Advantages of the powder method over the ordinary process amount to an annual saving of 9,300 rubles.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, IE

NR REF SOV: 000 OTHER: 000 JPRS

Card 2/2

VIKTOROV, G.V.; SOKOLOV, A.P.

Wind tunnel of the hydraulic-machinery laboratory of the Moscow Power Engineering Institute. Nauch.dokl.vys.shkoly; energ. no.3:3-12 '58. (MIRA 12:1)

1. Rekomendovano kafedroy gidromashin Moskovskogo energeticheskogo instituta.
(Hydraulic turbines--Models) (Wind tunnels)

VIKTOROV, I.

Council, active members, trade unions. Izobr.i rats. no.3:28-29 Mr '60. (MIRA 13:6)

1. Starshiy inzhener TSentral'nogo soveta Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov.
(Leningrad Province--Technological innovations)

CA

15

Calculating fundamental features of purification layouts in distilleries. M. Ershov. *Spirto-Vodochnaya Prom.* 16, No. 1, 15-20(1930).—Layout charts are shown for the complete cycle of operations in purifying mashes. In one cycle the time allotments are: charging 40 min., stirring 20 min., analysis 30 min., discharging 30 min., washing vat 20 min. Factors influencing the size, no. and arrangement of vats and other equipment units are discussed. **Systematic operation of purification layouts in distilleries.** I. Viktorov. *Ibid.* No. 2, 23-8.—Ershov's work is critically discussed, with emphasis on activated carbon treatment and filtration as factors in efficient mash purification.
Julian F. Smith

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VIKTOROV, I., polkovnik

Saboteurs in American uniforms. Kryl. rod. 16 no.3:31 Mr '65.
(MIRA 18:5)

VIKTOROV, I.

Result of partial resection of the kidney in tuberculosis.
Urologiia no.2:21-29 Ap-Je '55. (MLRA 8:10)

1. Iz urologicheskogo otdeleniya Obshchearmeyskoy bol'nitsy v Sofii (nach.-polkovnik L. Angelov)
(TUBERCULOSIS, RENAL, surgery,
partial reseaction)

STOYANOV, K., professor, general-mayor; VIKTOROV, I., podpolkovnik; RUMYANTSEV, N., mayor

Development and present status of urology in the Bulgarian People's Republic. Urologiia no.2:84-86 Ap-Je '55. (MLRA8:10)

1. Obshchearmeyskaya bol'nitsa, Sofiya, Bolgariya.
(UROLOGY,
in Bulgaria)

VIATOROV, I.

Professor Antal Babich on his 60th birthday. Khirurgiia 15 no.12:1121-1122 '62.

(BIOGRAPHIES)

VIKTOROV, I., dotsent; PATRASHKOV, T.; TSOLOV, TS.; NAKOV, E.

Cytodiagnosis in tumors of the bladder. Urologiia no.6: 39-41 N-D '63. (MIRA 17:9)

1. Iz urologicheskoy kliniki pri kafedre voyenno-polevoy khirurgii (nachal'nik - prof. G. Krystanov) Vysshego voyenno-meditsinskogo instituta v Sofii, Bolgariya.

VIKTOROV, I.A., Cand Phys-Math Sci--(diss) "Certain problems of diffusion of relay waves in solid bodies." Mos, Publishing House of Acad of Sci USSR, 1958. 8 pp (Acad Sci USSR. Acoustical Inst), 120 copies (KL,25-58,106)

VIKTOROV, I. A.

On Rayleigh Wave Propagation (in Solids)"

paper presented at the 4th All-Union Conf. on Accustics, Moscow, 26 May - 2 Jun 58.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859730001-7"

46-4-2-4/20

AUTHOR: Viktorov, I.A.

TITLE: Rayleigh-type Waves on Cylindrical Surfaces (Volny tipa releyevskikh na tsilindricheskikh poverkhnostyakh)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol IV, Nr 2, pp 131-136 (USSR)

ABSTRACT: It was found experimentally (Ref 2) that Rayleigh waves may be propagated on cylindrical surfaces and they may pass, practically unreflected, through curvatures with a radius of the order of one or more wavelength. The present paper deals with waves propagated along the surface of an infinite circular cylinder and along the surface of a cylindrical cavity of circular cross section in an infinite elastic medium. In both cases (convex and concave cylindrical surfaces) the author limits himself to a two-dimensional problem in cylindrical coordinates r, θ, z (Fig 1), when the field in the elastic medium does not depend on z. It is also assumed that only steady-state harmonic vibrations are present. The analogue of Rayleigh waves in this case would be such a solution of the elastic theory equations which would have the following properties: (1) it should satisfy the condition of absence of stresses on the cylindrical surface; (2) the solution should depend

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46-4-2-4/20

Rayleigh-type Waves on Cylindrical Surfaces

on the angular coordinate θ in the form $e^{\pm ip\theta}$, where p is a certain non-dimensional quantity which may be called the angular wave-number; (3) as the radius of curvature of the cylindrical surface tends to infinity but the ratio p/R, where R is the cylinder radius, remains finite the solution should become an ordinary Rayleigh wave propagated along the plane boundary between an elastic semi-infinite space and vacuum. The treatment is not limited to integral values of p and for the solid cylinder the author makes the solution obey the condition that it should be finite on the cylinder axis. For the convex cylindrical surface the author finds the following expression for the phase velocity of the surface waves: $C = C_0(1 + \delta)$, where C_0 is the phase velocity of Rayleigh waves along the plane boundary of an elastic semi-space and vacuum, and δ is a small correction which depends on the elastic properties of the medium and on p. For the concave cylindrical surface the phase velocity is given by $C = C_0(1 + \zeta)$, where ζ is a small correction which depends on the elastic properties of the medium and on the value of k_1R, where k_1 is the real part of the complex wave-number k. The author thanks

Card 2/3

Rayleigh-type Waves on Cylindrical Surfaces 46-4-2-4/20

G.D. Maljuzhints who directed this work. There are 3 figures and 4 references, 1 of which is Soviet, 1 English, 1 American and 1 translation of a Western work into Russian.

ASSOCIATION: Akusticheskiy Institut AN SSSR, Moskva (Acoustics Institute, Academy of Sciences of the USSR, Moscow)

SUBMITTED: July 8, 1957

Card 3/3 1. Waves--Propagation 2. Waves--Reflection 3. Cylinders--Applications

AUTHOR: Viktorov, I. A. 20-119-3-16/65

TITLE: On the Influence of Surface Imperfections on the Propagation of Rayleigh Waves (O vliyanii nesovershenstv poverkhnosti na rasprostraniye releyevskikh voln)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 3, pp. 463 - 465 (USSR)

ABSTRACT: This work experimentally examines the influence of single surface imperfections. Here the author uses various models of surface imperfections and he studies the reflection of Rayleigh waves on these models. The author chose the following models of imperfections: A slit, cut into the surface; a semicylindric clearance; a wedge with various generating angles. The first two models cover the defects of the type of slits and bulges, and by the third mentioned model, the jogs in the surface can be described. The slit, the cylindric clearances, and the edge of the wedge are assumed to be vertical to the propagation direction of the Rayleigh wave. The measurements were performed with impulses with a frequency of 3 megacycles and the pulse duration was 10 microseconds. The Rayleigh waves

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20-119-3-16/65

On the Influence of Surface Imperfections on the Propagation of Rayleigh Waves

were produced at plane side faces of rectangular metallic bars. The results of the measurements are illustrated in 3 diagrams. A strict interpretation of the here obtained dependences demands the solution of the diffraction of Rayleigh waves at a wedge, at a slit, and at a semicylindrical bulge. Because of the extremely difficult solution of these problems the author restricts himself upon giving some experimental facts and upon the explanation of some particularities of the here obtained curves. A part of the energy of the incident Rayleigh wave always transforms into the energy of longitudinal and transversal waves, which are dispersed by the named imperfections. Slits and clearances with the radius $R > 0,25\lambda$ disperse the strongest. The curves for the dependence of the reflection coefficients and of the passage coefficients on the angle of incidence have some sharply marked maxima and minima, whereby as a rule the maximum of the reflection coefficient corresponds with the minimum of the passage

Card 2/4

20-119-3-16/65

On the Influence of Surface Imperfections on the Propagation of Rayleigh Waves

ASSOCIATION: Akusticheskiy institut Akademii nauk SSSR (Acoustics Institute, AS USSR)

PRESENTED: November 27, 1957, by N. N. Andreyev, Member, Academy of Sciences, USSR

SUBMITTED: November 22, 1957

AVAILABLE: Library of Congress

Card 4/4

20-119-3-16/65

On the Influence of Surface Imperfections on the Propagation of Rayleigh Waves

coefficient and vice versa (except the case $\theta = 115^{\circ}$). The reflection coefficients and the passage coefficients never reach the values 1 and 0. On occasion of approximation of the wedge angle to 180° the reflection coefficient goes toward zero and the passage coefficient toward 1. The results found here, seem to prove to be correct for all elastic wedges. In the case of an increase of the ratio h/λ (whereby h dendes the slit depth) the reflection coefficient oscillatingly increases and the passage coefficient oscillatingly decreases. Also the curves for the semicylindric clearance are illustrated by a diagram. In the case of equal depth of the slit and of the clearance a slit screens out more and also reflects stronger than the clearance. Finally the author thanks G. D. Malyuzhinets for valuable hints and advices and Yu. M. Sukharevskiy for the suggestion of the theme and for his interest in the work. There are 4 figures and 2 references, 1 of which is Soviet.

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SOV/46-5-3-16/32

24(1), 24(6)

AUTHORS: Viktorov, I.A. and Grigoryan, R.A.

TITLE: Quasi-Rayleigh Waves in an Elastic Layer (Kvazireleyevskiye volny v uprugom sloye)

PERIODICAL: Akusticheskiy zhurnal, 1959, Vol 5, Nr 3, pp 366-368 (USSR)

ABSTRACT: Ultrasonic Rayleigh waves, used in surface defectoscopy or in delay lines, are excited on the surface of an elastic layer of finite thickness, such as a rod or plate. Strictly speaking, Rayleigh waves may be propagated only along a surface of a semi-infinite body. A theoretical analysis shows that the usual Rayleigh wave is hot propagated in a plane-parallel elastic layer which has a source of sinusiudal Rayleigh waves placed on one of its free surfaces. When the layer thickness d is sufficiently great ($d > 2\lambda_R$, where λ_R is the Rayleigh wavelength in the layer) two normal waves are excited. They are a zero-symmetrical and zero-antisymmetrical waves, known as "s" and "a" waves respectively. These waves are similar to Rayleigh waves in the case when $d > 2\lambda_R$, e.g. their phase and group velocities are close to the phase velocity of Rayleigh waves. The other normal waves are excited very weakly. The "s" and "a" waves have approximately the same amplitudes and phases and they

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interfere with one another. Near the radiator, where their phase difference is close to zero, their total acoustic field is similar to the acoustic field of Rayleigh waves and consequently the "s" and "a" waves together are called a quasi-Rayleigh wave. The theoretical deductions were checked experimentally using a generator of square pulses of 2-10 μsec duration, 2.7 Mc/s frequency, a wedge-shaped radiator and receiver of Rayleigh waves (Ref 2), a resonance amplifier and an indicator. The experiments were carried out on duralumin strips of 0.9-5 mm thickness and confirmed the theoretical predictions. Acknowledgment is made to G.D. Malyuzhinets for his advice. There are 2 figures and 2 English references.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Acoustics Institute, Ac.Sc.USSR. Moscow)

SUBMITTED: June 30, 1958

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859730001-7"

20232

S/046/61/007/001/002/015
B104/B204

6,8000 (and 1147, 1155)

AUTHOR: Viktorov, I. A.

TITLE: Attenuation of Rayleigh waves on cylindrical surfaces

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 1, 1961, 21-25

TEXT: In ultrasonic defectoscopy, Rayleigh waves are used, and therefore interest is displayed in the peculiar features of the propagation of Rayleigh waves over cylindrical surfaces. In his earlier papers, the author was already able to show that harmonic elastic surface waves, propagating over a free surface of an infinitely long circular cylinder or a circular cavity in an unbounded elastic medium, are similar to Rayleigh waves, and go over into the latter at $k_0R \longrightarrow \infty$, if the propagation direction is perpendicular to the surface. k_0 is the wave number of the Rayleigh waves, R the curvature radius of the surfaces. Therefore, the author is able to confine himself, in future to concave and convex surfaces on Rayleigh waves when studying wave propagation. For the phase velocities, $C > C_0$ then holds for a convex surface, and $C < C_0$ for a concave one, where C_0 is the phase velocity of the Rayleigh waves on a given surface. The Rayleigh waves, which are propagated

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Attenuation of ...

S/046/61/007/001/002/015
B104/B204

on a concave surface, have a special property: while being propagated in a perfect medium, they are attenuated owing to energy emission into the interior of the medium. The Rayleigh waves on concave surfaces differ from those on plane or convex surfaces. For the attenuation factor of waves on a concave surface along one wavelength λ_0 of Rayleigh waves, the author gives the formula

$$\delta = \frac{\pi q_0 s_0 (k_0^2 + s_0^2)^2}{2k_0^2 (q_0 - s_0)[k_0^2 (q_0 - s_0) + 2q_0 s_0^2]} \cdot e^{-2k_1 R \left(\mathrm{arcth}\,\frac{s_1}{k_1} - \frac{s_1}{k_1}\right)}, \qquad (1)$$

in which $q_0 = \sqrt{k_0^2 + k_1^2}$, $s_0 = \sqrt{k_0^2 + k_t^2}$, $s_1 = \sqrt{k_1^2 - k_t^2}$, k_1 and k_t are the wave numbers of the longitudinal and transverse waves, k_1 is the real part of the wave number of the Rayleigh waves on the concave surface. This formula, which is to hold for $k_0R > 100$, was experimentally studied by the author. Investigations were carried out by using square pulses filled up with sinusoidal oscillations by means of a Rayleigh-wave emitter and receiver, a resonance amplifier, and an indicator. The experimental values of δ are compared in Fig. 1 with those calculated from the curves according to formula (1). ν is Poisson's ratio. Formula (1) is correct from $k_0R \simeq 30$ and

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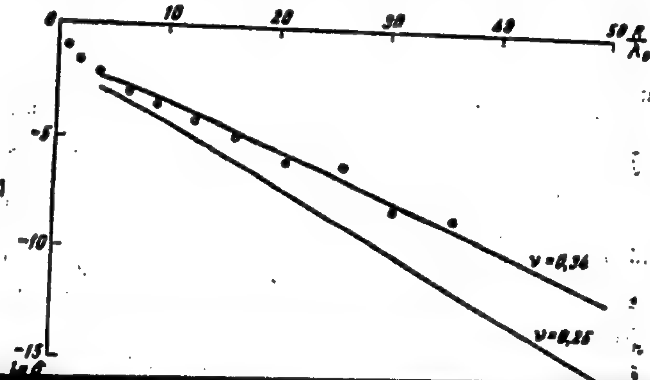
$R/\lambda_0 \simeq 5$ onward. Similar investigations were carried out for the purpose of proving the statement that, on convex surfaces, compared to plane surfaces, no additional attenuation occurs. The above-mentioned statement could be clearly proved. There are 3 figures, 1 table and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc

ASSOCIATION: Akusticheskiy institut AN SSSR Moskva (Institute of Acoustics of the AS USSR, Moscow)

SUBMITTED: June 21, 1960

Fig. 1



VIKTOROV, I.A.

Transmission and reflection of Rayleigh waves at rounded corners of different radii. Akust. zhur. 7 no.1:90-91 '61. (MIRA 14:4)

1. Akusticheskiy institut AN SSSR, Moskva.
(Ultrasonic waves)

VIKTOROV, I.A.

Investigation of methods for the excitation of Rayleigh waves.
Akust. zhur. 7 no3.:295-306 '61. (MIRA 14:9)

1. Akusticheskiy institut AN SSSR, Moskva.
(Ultrasonic waves)

S/046/62/008/002/001/016
B104/B102

AUTHOR: Viktorov, I. A.

TITLE: Ultrasonic Rayleigh waves

PERIODICAL: Akusticheskiy zhurnal, v. 8, no. 2, 1962, 153-167

TEXT: This is a review article on investigations of ultrasonic Rayleigh waves, carried out in Russia and other countries in the years 1885 to 196?. Summing up: ultrasonic Rayleigh waves can arise and propagate in relatively thin samples (5-10 λ_{Rayl} thick), and can easily be produced under laboratory and industrial conditions. As with increasing distance from the sound source, Rayleigh waves are less attenuated than body waves, there is no need for powerful sound sources in experimental devices. Ultrasonic Rayleigh waves travel along both straight and curvilinear surfaces. The excellent reflection of such waves by surface imperfections makes it possible to use them in surface flaw detectors and detectors for examining the surface condition of samples. There are 11 figures and 2 tables.

~~Card 1/2~~ Acoustics Inst. AS USSR

VIKTOROV, I.A.

Propagation of flexural oscillations of finite amplitude in a plane plate. Akust.zhur. 8 no.3:363-364 '62. (MIRA 15:11)

1. Akusticheskiy institut AN SSSR, Moskva.
(Oscillations) (Elastic plates and shells)

S/046/63/009/001/003/026
B104/B186

AUTHORS: Viktorov, I. A., Zubova, O. M.

TITLE: Normal waves in a solid cylindrical layer

PERIODICAL: Akusticheskiy zhurnal, v. 9, no. 1, 1963, 19-22

TEXT: The propagation of harmonic plane waves through a thin layer of hollow-cylinder shape perpendicular to the cylinder generatrix is studied under the assumption that the elastic field does not depend on the z coordinate. The solution of the equation of elasticity has to satisfy the following conditions: (1) Absence of tensions in the inner and in the outer cylinder surfaces; (2) The solution depends on θ according to $\exp(\pm ip\theta)$, where p is the wave number; (3) If the radius of curvature tends to infinity, h and ω become characteristics of normal waves in a plane layer. Under these assumptions the front of the propagating normal waves is a plane which propagates along the cylinder axis. The solutions

$$\varphi = [AJ_p(k_l r) + CN_p(k_l r)]\, e^{ip\theta},$$
$$\psi = [BJ_p(k_t r) + DN_p(k_t r)]\, e^{ip\theta}, \qquad (3)$$

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of the equations

$$\begin{cases}\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial\varphi}{\partial r}\right)+\frac{1}{r^2}\frac{\partial^2\varphi}{\partial\theta^2}+k_l^2\varphi=0,\\ \frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial\psi}{\partial r}\right)+\frac{1}{r^2}\frac{\partial^2\psi}{\partial\theta^2}+k_t^2\psi=0.\end{cases} \quad (1)$$

are developed by means of the characteristic equation which defines the relationship between the wave number $k = p/R$ and the wave number $k_{1,t}$. At a definite k, three of the four constants A, B, C and D may be expressed by the fourth and the expressions for the potentials (3) can be completely determined. In first approximation the velocity and other characteristics of normal wave propagation in a hollow cylinder with a great radius of curvature are not affected by the curvature. In second-order approximation the group velocity correction caused by the curvature is proportional to $(1/p_0)^2$ and depends on the wave number and on the layer thickness. There are 2 figures.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Institute of Acoustics AS USSR, Moscow)

SUBMITTED: February 7, 1962

L 10517-63 EWT(1)/BDS--AFFTC/ASD--Pi-4

ACCESSION NR: AP3000816 S/0046/63/009/002/0162/0170

58

AUTHOR: Viktorov, I. A.; Grishchenko, Ye. K.; Kayekina, T. M.

56

TITLE: Investigation of ultrasonic surface wave propagation on a solid-liquid interface 21

SOURCE: Akusticheskiy zhurnal, v. 9, no. 2, 1963, 162-170

TOPIC TAGS: surface wave, Rayleigh wave, liquid-solid interface, phase-velocity measurement, damping factor, wave number, wave damping

ABSTRACT: Theoretical and experimental investigations have been conducted concerning the effect of a layer of liquid of finite or infinite thickness on the characteristics of an ultrasonic surface wave moving on the common boundary of a solid half-space and a liquid and turning into a Rayleigh wave when the density of the liquid approaches zero. Cases considered are 1) adjacent solid and liquid half-spaces and 2) a liquid layer of finite thickness bounded on one side by a vacuum and on the other by a solid half-space. The solid is assumed to be homogeneous, isotropic, and perfectly elastic, and the liquid to be ideal.

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L 10517-63

ACCESSION NR: AP3000816

Expressions previously derived from wave equations for determining, in both cases, displacements in the liquid and in the solid are given, as is an equation for determining phase velocity and wave number. The results obtained by solving these equations on the "Ural" electronic computer are plotted in diagrams, showing the dependence of the C/C_R ratio and of the damping factor of the surface wave on the ρ_{liq}/ρ_{sol} ratio for various Poisson ratios and wave numbers, where C is the phase velocity of the surface wave, C_R is the phase velocity of the Rayleigh wave, and ρ_{sol} and ρ_{liq} are the densities of the liquid and solid. The experimental investigation was carried out on a pulse device consisting of a signal generator modulated by a rectangular pulse and an amplifier and indicator. Steel and aluminum were used as solid media, and water and transformer oil as liquids. The phenomenon of transformation of a Rayleigh wave propagating in the solid into a surface wave at the instant of reaching the interface between solid and liquid is discussed, as are the associated energy losses, their amount, and nature. The theoretical and empirical data obtained are compared in a table showing discrepancies in phase velocities (about 15%) and in wave damping (about 10%). "In conclusion the authors express their thanks to L. S. Yanina for her carrying out of the basic measurements." Orig. art. has: 6 figures, 1 table, and 3 formulas.

Card 2/2 Acoustics Institute

VIKTOROV, I.A.; ZUBOVA, O.M.

Directionality diagrams of radiators of Lamb and Rayleigh waves. Akust. zhur. 9 no.2:171-175 '63. (MIRA 16:4)

1. Akusticheskiy institut AN SSSR, Moskva.
(Ultrasonic waves)

VIKTOROV, I.A.

Second approximation effects due to wave propagation in solid bodies. Akust. zhur. 9 no.3:296-300 '63. (MIRA 16:8)

1. Akusticheskiy institut AN SSSR, Moskva.
(Ultrasonic waves)

VIKTOROV, I. A.

"Rayleigh and Lamb Waves on Cylindrical Surfaces."

report submitted for Ultrasonic Symp, Santa Monica, Calif, 14-16 Oct 64.

Acoustics Inst, AS USSR.

ACCESSION NR: AP4025728 S/0046/64/010/001/0030/0033

AUTHORS: Viktorov, I. A.; Kayekina, T. M.

TITLE: Scattering of ultrasonic Rayleigh waves in models of surface defects

SOURCE: Akusticheskiy zhurnal, v. 10, no. 1, 1964, 30-33

TOPIC TAGS: wave scattering, ultrasonic Rayleigh wave, surface defect, semi-spherical hollow, cylindrical cavity, wave propagation, wave damping

ABSTRACT: I. A. Viktorov (O vliyanii defektov poverkhnosti na rasprostraneniye releyevskikh voln. Sb. "Primeneniye ul'trazvukovy*kh kolebaniy dlya issledovaniya svoystv, kontrolya kachestva i obrabotki metallov i splavov", Kiyev, Izd-vo AN USSR, 1960, 54-61) described results of the experimental study of the effect of unit surface defects on reflection and passage of Rayleigh waves; he studied the following forms of surface defects: cracks and semi-cylindrical hollows cut on the surface along which the waves are propagated. The majority of strained surface defects (cracks, hollows, notches) can be reduced to these two models. The present authors describe an experimental study of scattering of ultrasonic Rayleigh waves for two other types of surface defects: semi-spherical hollows of various diameters and

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ACCESSION NR: AP4025728

cylindrical channels of various diameters and depths, drilled perpendicular to the surface along which the Rayleigh wave is propagated. By these models, which are a natural complement to the first two, one can represent surface defects of pit and vertical crack type, going down from the surface, and so forth. Together with models of surface-strain defects, these models characterize to some extent all forms of surface defects. Measurements were made under impulse conditions as described by Viktorov. The duration of an impulse was 10 microseconds, the charging frequency - 2.74 megacycles per second. Models of defects of various dimensions were used on well-worked surfaces of rectangular Dural sheets 450 x 300 x 7 mm. Radiation and a dose of Rayleigh waves were accomplished by the wedge method. A radiating wedge was placed at a distance of 225 mm from the model of the defect, and a beam of Rayleigh waves was sent in its direction. A receiving wedge was then placed at circumference points of radius 50 mm around the model. Each measurement of amplitude of the scattered wave was immediately referred to the corresponding measurement of amplitude of the incident wave at a point between the radiator and the model of the defect separated from the radiator along the axis by 103 mm and sideways from the axis by 25 mm. The oscillation amplitude of the surface at this point is uniquely related to the oscillation amplitude of the model directly. This relation was experimentally determined without a model by measuring the amplitude of

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ACCESSION NR: AP4025728

the incident wave in the assumed place of position of the model. The receiving wedge was in acoustical contact with the surface of the Dural sheet only in a circle of diameter 3 mm, which made it possible to measure the oscillation amplitude of the surface of the sheet in a small region (locally). Acoustical contact was made by a film of castor oil. For exclusion of the effect of changes of the acoustical contact on the results of the measurements, each pair of measurements (at points of the circumference and between the radiator and the model of the defect) was repeated 20 times with subsequent averaging. "In conclusion we express our gratitude to L. S. Grishchenko for doing the basic measurements." Orig. art. has: 3 figures and 2 formulas.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moscow (Acoustical Institute, AN SSSR)

SUBMITTED: 04Jun63 DATE ACQ: 10Apr64 ENCL: 00

SUB CODE: AI, PH NO REF SOV: 004 OTHER: 000

Card 3/3

VIKTOROV, I.A.

Attenuation of ultrasonic surface and body waves. Akust. zhur. 10 no.1:116-118 '64. (MIRA 17:5)

1. Akusticheskiy institut AN SSSR, Moskva.

L 17804-65 EWT(l)/EWT(m)/T/EWP(t)/EWP(k)/EWP(b) Pf-4/Pi-4 ASD(a)-5/
AFWL/RAEM(c)/RAEM(j)/ESD(dp)/ESD(gs)/ESD(t)/IJP(c) JD

ACCESSION NR: AP4049294 S/0046/64/010/004/0403/0406

AUTHORS: Vas'kova, V. I.; Viktorov, I. A.; Rozenberg, L. D.

TITLE: Amplification of ultrasonic signal and noise in a CdS crystal

SOURCE: Akusticheskiy zhurnal, v. 10, no. 4, 1964, 403-406

TOPIC TAGS: cadmium sulfide, ultrasound amplification, ultrasonic pulse, single crystal, field intensity, noise immunity

ABSTRACT: The experiments described were made with a CdS crystal grown from a melt under pressure at the Vsesoyuzny*y n.-i. institut monokristallov (Khar'kov). The experimental setup was analogous to that described by A. R. Hutson et al. (Phys. Rev. Let. 1961, v. 7, 6, 237-239). A pulse of transverse ultrasonic waves of 1 μsec duration with carrier frequency ~30 Mcs was radiated by a Y-cut quartz slab and transmitted through a system consisting of the investigated crystal, placed between two auxiliary fused-quartz waveguides, re-

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L 17804-65

ACCESSION NR: AP4049294

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ceived by a second quartz slab, and observed on an oscilloscope screen after amplification by a tuned amplifier and detection. A maximum gain of 35 dB was obtained at 30 Mcs for a sample 12.3 mm long under the following optimal conditions: crystal conductivity 6 5 x 10^{-5} ohm^{-1} cm^{-1}, field intensity 2857 V/cm. It is shown that noise affects the gain of an ultrasound signal both by changing the waveform of the [illegible] maximum gain. [illegible]ers thank L. A. Sy'soye[illegible] for supplying the cadmium sulfide single crystals, A. A. Chabam for [illegible] and a discussion of the work, and N. I. Bezrukova for help in the development of the experimental setup." Orig. art. has: 3 figures, 2 tables, and 1 formula.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moscow (Acoustics Institute, AN SSSR)

SUBMITTED: 19Jul64 ENCL: 00

SUB CODE: GP, SS NR REF SOV: 003 OTHER: 004

Card 2/2

ACCESSION NR: [illegible]

AUTHOR: Viktorov, I. A.

TITLE: Ultrasonic Lamb waves (Review)

[illegible] zhurnal, v. 11, no. 1, 1965, 1-18

ABSTRACT: This is a review of the properties of ultrasonic Lamb waves, which have recently found extensive practical use in nondestructive flaw detection, ultrasonic delay lines, precision instruments of sheet metal, determination of elastic constant of substances, and others. The following subjects are covered: 1. Concept of Lamb waves, their number, phase and group velocities, motion in Lamb waves. [illegible] Lamb waves. 3. Connection between Lamb and Rayleigh waves. [illegible] of Lamb- [illegible] 6. Directivity patterns [illegible] in a cylindrical layer. 7. Propagation in the [illegible] figures, 31 formulas, and 1 table.

Card 1/2

L 38125-65

ACCESSION NR AP5006174

ASSOCIATION: Akusticheskiy institut AN SSSR, Moscow (Acoustics Institute, AN SSSR)

SUBMITTED: 14Sep . ENCL: 00 SUB CODE: GP

NR REF SOV: 014 OTHER: 000

Card 2/2

L 36544-66 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) AT/JD

ACC NR: AP6016834 SOURCE CODE: UR/0046/66/012/002/0251/0251

AUTHOR: Viktorov, I. A.

ORG: Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Interaction of ultrasonic Rayleigh waves with conduction electrons in CdS crystals

SOURCE: Akusticheskiy zhurnal, v. 12, no. 2, 1966, 251

TOPIC TAGS: cadmium sulfide, ultrasonic wave, Rayleigh wave, conduction electron, electron interaction, acoustic damping

ABSTRACT: The author describes the first experiments on the observation of interaction between ultrasonic Rayleigh waves and conduction electrons in CdS, inasmuch as such an interaction was not observed in the past. The experiments were made in the pulsed mode using apparatus consisting of an electric square-wave pulse generator with sinusoidal carrier, a resonant amplifier, and a cathode ray oscilloscope. The pulse duration was 6 μsec and the carrier frequency 30 Mcs. The crystal was grown from the melt under inert-gas pressure and measured 11 x 11 x 50 mm. The Rayleigh waves were propagated on the 11 x 50 mm face, the surface of which was polished. The excitation and reception of the waves was with the aid of ridge-type converters described by the author earlier (Akust. zh. v. 7, 295, 1961). The inter-

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action between the Rayleigh wave and the conduction electrons was estimated by determining the coefficient α of additional wave damping brought about by the conduction electrons. The dependence of α on the specific conductivity σ of the crystal was determined for this purpose. The results show that the damping of the Rayleigh wave, and consequently its interaction with the conduction electron, depends very strongly on the conductivity of the crystal, and increases particularly rapidly with increasing conductivity when $10^{-6} < \sigma < 1.7 \times 10^{-5}$. A maximum interaction with the electrons occurs between 6.9×10^{-4} and 1.7×10^{-5}, where the damping was so strong that the amplitude of the Rayleigh wave could not be measured. For $\sigma > 6.9 \times 10^{-4}$ the damping decreased rapidly with increasing conductivity. The author thanks A. F. Dorokhov for preparing the ridge structure for the excitation and reception of the Rayleigh wave, and L. D. Rozenberg and A. A. Chaban for valuable discussions. Orig. art. has: 1 table.

SUB CODE: 20/ SUBM DATE: 06Apr66/ ORIG REF: 002/ OTH REF: 001

Card 2/2 MLP

L 30383-66 EWP(k)/EWT(1)/T

ACC NR: AP6007992 (N) SOURCE CODE: UR/0046/66/012/001/0001/0006

AUTHOR: Vas'kova, V. I.; Viktorov, I. A.; Rozenberg, L. D. 52 50

ORG: Institute of Acoustics, AN SSSR, Moscow (Akusticheskiy institut AN SSSR) B

TITLE: The generation and amplification of an ultrasonic signal in CdS crystals with a barrier layer 21

SOURCE: Akusticheskiy zhurnal, v. 12, no. 1, 1966, 1-6

TOPIC TAGS: ~~single crystal~~, crystal surface, cadmium sulfide, ultrasonic wave, ultrasonic amplification, TRANSVERSE WAVE

ABSTRACT: The direct amplification of transverse and dilatational ultrasonic waves by means of a static electric field (drift field) has been observed many times. Some authors have also described the use of CdS crystals for the excitation and reception of hf ultrasonic waves. If a high-resistance barrier or diffusion layer is formed on the surface of a CdS crystal; when electric current is fed to the crystal, most of it remains in the surface layer instead of penetrating into the bulk of the crystal. This circumstance is, apparently, the main factor which makes difficult the generation and subsequent amplification of a drift field of ultrasonic waves in a CdS crystal, and why this effect has not been observed heretofore. In order to create a drift field of the required magnitude in the crystal it is necessary to use very high voltages. The present authors made an attempt to achieve the generation and amplification of transverse ultrasonic waves in a CdS crystal. The experiments showed that a signal observed (C) proved

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to be an ultrasonic pulse of transverse waves generated and amplified in the crystal. The generation of C is achieved by the forward front of the pulse of the drift field due to the presence of a barrier layer in the crystal. The authors conclude that both generation and amplification of ultrasonic waves are indeed feasible in a CdS crystal. A quantitative analysis of the results observed is given, together with detailed descriptions of the procedures and the equipment used. In conclusion, the authors express their sincere gratitude to L. A. Sysoyev for making available the cadmium sulfide single crystals and to A. A. Chaban for valuable advice and a discussion of the work. Orig. art. has: 4 figures.

SUB CODE: 20 / SUBM DATE: 02Mar65 / ORIG REF: 002 / OTH REF: 007

Card 2/2 cc

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Lamb's ultrasonic waves; review. Akust. zhur. 11 no.1:1-12 '65. (MIRA 18:4)

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VAS'KOVA, V.I.; VIKTOROV, I.A.; ROZENBERG, L.D.

Amplification of ultrasonic signals, and noises in CdS crystals. Akust.zhur. 10 no.4:403-406 '64. (MIRA 18:2)

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Use of the "wedge" method in studying the generation of Lamb waves. Akust.zhur. 10 no.4:412-418 '64. (MIRA 18:2)

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